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NON-SPECIFIC MEASURES IN THE TREATMENT OF PNEUMONIA

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Two agents which closely rival specific measures in the treatment of pneumonia have gradually been developed. These are sugar and oxygen. We must all agree that with less than an adequate amount of oxygen and sugar in the blood even serum of the specific type will fail. As we look over the past twenty-five years it is astonishing to note our increasing use of oxygen. In my early days oxygen was never thought of until the patient was at death's door, either deeply cyanotic or unconscious. I seriously doubt that it was of much value as practically every case in which it was so used went on to a fatal termination.

The factor which has contributed most to our appreciation of the value of oxygen in the treatment of pneumonia comes from our increasing knowledge of anoxemia. In pneumonia there are several elements which contribute to anoxemia; fever, which speeds up metabolism with its marked increase in the consumption of oxygen; consolidation, which reduces the ventilation area of the lungs, obstruction of the air passage by mucus, abdominal distention, pleuritic effusion or collapse of part of the lung, shallow breathing to escape the pain of pleuritis, and anemia, which the patient may have in varying degree.

In a fair percentage of cases the increase in the pulse and respiratory rate may keep the blood-oxygen content at a safe limit, but with the first suggestion of cyanosis, best found in the nail beds, oxygenation is incomplete. The indications for the use of oxygen are cyanosis of the nail beds spreading to the mucus membranes, a pulse over 130, and respiration climbing over 36. In this condition early and continuous use of oxygen are essential. It may be necessary to continue it even after resolution has started if anoxemia is still evident. It is to be remembered that there is no storage of oxygen in the body. Lastly it must be given in sufficient concentration to accomplish its purpose.

Read before the Providence Medical Association, February 7, 1938.

There are many methods of supplying oxygen to attain these objectives. The oxygen room would be ideal were it not for the very serious danger of fire and the prohibitive cost. In most instances, some form of tent is satisfactory. The Burgess Box has more advantages and fewer disadvantages than any other present method. The catheter method with the tube well down to the pharynx may be satisfactory; various types of mask are on the market. The important factor is to get a concentration of oxygen into the lungs sufficient to completely relieve cyanosis. For this purpose it is desirable to use the large industrial 6000 liter cylinders with regulator and pressure gauge. The oxygen flow gauge is absolutely necessary. The rate of flow depends on the clinical requirements, probably about 4 liters per minute. It may vary from time to time in the same individual as his respiration rate changes.

In most hospitals it has been found desirable to specially train one or more attendants to set up the tents, regulate the gauges, handle the oxygen and be responsible for its satisfactory use. In the home, where the oxygen team is not available, it is highly desirable to get a trained nurse of sufficiently recent vintage to be familiar with these modern methods of using oxygen. As the nasal catheter requires frequent removal for cleansing she must know where the tip should be. She must understand the gauges, know the fire hazard in using oxygen, watch the ice and wash bottles, change the soda lime.

Now I take up fluids given intravenously and particularly sugar solution. While my own experience has largely been with glucose solution there is reason to believe that sucrose may at times be of advantage. The intravenous administration of fluid in pneumonia may not always be required, but for the most part our management of pneumonia has definitely improved with the free use of venuclysis. There are many indications for venuclysis, with dehydration probably the most important. If the dehydration is severe with marked loss of electrolytes by sweating or vomiting then certainly

saline solution plain or with glucose is indicated. This question of salt must be balanced nicely as excess of salt may produce œdema and consequently increased work for the heart. For a very sick patient who is taking fluids only fairly well 1000 cc. of 5% glucose in saline twice daily may be adequate. It should be given slowly. In severe dehydration more than this may be required to restore skin turger. Concentrated sugar solution, 100 cc. of 50% glucose, in threatened pulmonary œdema is easily the best heart stimulant we have. The advantage of sucrose over glucose is its more prolonged action. However, I feel that we see much less pulmonary œdema since we have been using early oxygen and adequate sugar. It is also notable that we rarely get the chills and fever reactions, that formerly were so common with intravenous solutions, since we have been using commercially prepared solutions.

I would like to return now for a moment to the question of nursing. At times I feel that as a factor in handling pneumonia, nursing rates in importance with serum, oxygen, and glucose. When possible the place to treat pneumonia is the hospital, but it must be early and not on the 5th or 6th day. The obvious advantages are the ease of sputum typing, frequent blood cultures and x-ray facilities. The disadvantage of the hospital is the effort of moving the patient from his home. If kept at home a special Goetch bed should be provided; a day and night nurse are desirable. Twelve hours with a sick pneumonia case is as much and perhaps more than any nurse can stand. Eight hour shifts are better if funds are available. As previously noted pneumonia nurses should be familiar with oxygen equipment.

An attempt should be made to maintain the caloric requirement by a liquid and very simple soft solid diet. Fruit juices and sweet drinks help to maintain the water balance and supply essential carbohydrates. I know of an excellent clinician who insists on a quart of orange juice a day exclusive of all other foods, to keep up the liver glycogen, supply vitamine C and aid in maintaining fluids.

For the pain of pleurisy adhesive strapping or a binder may solve the problem. I am still very partial to a large old fashioned flaxseed poultice. A word should be said for artificial pneumothorax in intractable pleuratic pain. At the present time I personally see no other indication for this procedure. Diathermy also has its advocates. We should not forget cupping which is still in favor in many European hospitals. Codeine rather than morphine is in my opinion the drug for pain and for excessive exhausting cough. I use codeine although I believe cough mixtures are among the least important measures in handling these cases. Sedatives may be needed but sedation is apt to be overdone. Any drug that depresses the vital centers or the cough reflexes may do harm. For restlessness, insomnia or delirium, chloral and bromides are the best drugs but should be used only if absolutely necessary.

With reference to the question of alcohol in the treatment of pneumonia opinions still vary. I use it in some cases though Dr. Burgess has tried hard to reform my opinion. My tendency is to use it less and less. In habitual users it probably does more good than harm. In those unaccustomed to its use it may produce restlessess and gastric upsets. I see no value in its use as a preventive. About digitalis my ideas are quite definite. A few years ago we gave it as routine believing that it was good therapeutics to protect the heart. Increasing evidence indicates that in the normal heart digitalis is a toxic irritant. I now use it only in the presence of fibrillation and threatened or actual congestive failure. Coramine and caffeine as emergency heart stimulants are the present vogue.

Sulfanilamide we have used many times with results that were often convincing and again disappointing. I have used it mostly in type 3 cases or when we have been unable to determine the type. There have been occasional desperate cases where it seemed to be life saving. A great amount of experience with this drug is being collected and all the evidence is not in. We are also beginning to see some of its untoward effects. I now have a patient with a markedly depressed bone marrow that seems to have resulted from this drug. Streptococcus beta pneumonia should have sulphanilamide. I shall continue to use it in type 3 until specific type 3 rabbit serum is available. I might add that many are using sodium bicarbonate with this drug because of its tendency to reduce the CO_2 reserve and produce acidosis.

For distention we are now using very high concentrations of oxygen, 95%. This we get by closing the top of the Burgess Box and testing the oxygen concentration at the patient's mouth. Our experience is very encouraging. I wish to close with a very brief mention of the use of the X-ray as a non-

specific measure. This year at the Rhode Island Hospital, Dr. Burgess and myself are attempting a series of cases and controls to test the value of this procedure. We are handicapped somewhat by the apparent good health of this community and our experience, so far limited to a few cases, could mean very little in evaluating it.

BACTEREMIA IN PNEUMONIA

ESTHER E. BRINTZENHOFF, A.B.,
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PROVIDENCE

New developments in the treatment of pneumonia require identification of the invading organism. For a long time we have depended almost entirely upon the examination of the sputum to furnish this information, but recently it has been found that blood cultures can be of vital importance in furnishing the necessary data.

In some cases, it is not possible to obtain a satisfactory specimen until late in the course of the disease and sometimes it is difficult to decide which of several organisms in the sputum is the responsible agent. In these instances a blood culture, if positive, can clear the uncertainties and make it possible to start specific treatment promptly.

The blood culture is important, too, as a guide for the adequate administration of serum, because cases in which bacteremia is present require additional quantities of serum. And finally, it serves as a prognosis,—a large number of organisms per cubic centimeter being a poor prognosis.

Suitable culture media and a satisfactory technic are essential if best results are to be obtained and since it has been noted that bacteremia frequently does not occur until the fourth day of the disease, blood cultures should be repeated on at least three successive days unless the temperature has returned to normal.

At the Rhode Island Hospital the media in use for two years is one especially favorable to the growth of pneumococci, streptococci and other delicate pathogens. Because of the manner in which it is made, accessory factors similar to vitamins are not destroyed but remain to enhance the growth of these pathogenic bacteria.

Read before the Providence Medical Association, February 7, 1938.

There is one essential point in technic. The amount of blood inoculated into the media should be kept relatively small, yet should be large enough to provide growth. If the proportion of blood to media is too great, the blood clots and the bacteria may become too much embedded within the clot to allow free growth. Moreover, large quantities of blood may carry enough antibody to retard growth of the organisms.

The technic used is as follows: 2-5 c.c. of whole blood are added at the bedside to 30 c.c. of media in a 50 c.c. flask. Approximately 5 c.c. of blood are added to 1 c.c. of 2% citrate solution in normal saline contained in a test tube. The flask is incubated immediately and the citrate mixture is divided into two equal portions and plates prepared with melted North Gelatin Agar. These plates show if the culture contains more than one organism and the number of colonies developing indicates the degree of the bacteremia. If the broth becomes contaminated the plates may still provide the results. Frequently the broth shows growth when the plates do not.

If a suspected case of pneumonia is admitted to the hospital outside of regular laboratory hours, flasks of media are provided so that the intern may plant the culture immediately. Frequently cultures taken in this way and examined the following morning make it possible to report the type of pneumococcus within 15 hours of admission and before a sputum specimen has been obtained.

The following cases are cited in illustration:

Case 1. A 13-year-old boy admitted to the hospital December 21, 1937, with the following history: Chill 3 days before admission followed by cough and pain in left chest. Temperature 105° by rectum. Blood culture obtained at 11 A. M. Sputum not obtained. Dec. 22, 1937, blood culture positive for Type I pneumococci and serum administered just 24 hours after admission. Vital signs improved but fluid developed in left chest pushing mediastium to the right. Repeated taps removed much fluid which became progressively thicker. Rib resection done and cavity drained on December 30, 1937. Patient's temperature fell to normal January 2, 1938, just 12 days after admission and remained so. Fluid from chest typed. Type I. At no time was sputum obtained. This case shows that the invading organism can be determined even though a sputum specimen can not be obtained.

Case 2. Patient admitted to hospital December 15, 1937. Blood culture taken and put into incuba-

tor at 1 A. M. December 16, 1937. Examination of culture at 9 A. M. showed no growth. At 4 P. M., 15 hours after incubation, pneumococci found and typed. Type 7. Serum administered with good results. In this case the type of pneumococcus had been determined from the sputum specimen, but a positive blood culture within 15 hours showed the presence of a bacteremia and made more adequate treatment possible.

Case 3. Patient receiving treatment in Accident Room had a chill and was admitted. Blood culture taken January 11, 1938, remained sterile but one taken January 13, 1938, 2 days later, showed Type 7 pneumococci. Patient received serum and improved. This shows that even though an early culture is not positive a subsequent one may show growth.

During Season Nov. 1 to June 1	*Total Blood Cultures*	*Positive*
1935-36	92	21 or 22.8%
1936-37	107	25 or 23.3%
Nov. & Dec., 1937	39	17 or 43.5%

SOME PHYSIOLOGICAL ASPECTS OF AN EFFICIENT DIABETIC REGIMEN

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In the author's case of diabetes mellitus of twelve years' incidence, data on body weight and insulin intake for the past ten years show, when graphically presented, the indispensability of insulin for the subject. Thus the gradual withdrawal of insulin was accompanied by a decrease in body weight, and the re-establishment of insulin treatment progressively restored the normal weight and physical vigor.

For the past three and one-half years precise daily observations have been recorded, and the data have been summarized and charted on the basis of monthly averages, not only for body weight and insulin intake, but for the composition and caloric count of the diet, for the hours of rest, for the correlation of diet, insulin, and exercise, and for the occurrence of hypoglucemic reactions.

Abstract of thesis submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy in the Graduate School of Brown University, September, 1937.

Comparison experiments with fructose and glucose, especially as present in honey in the comb, extracted unheated, liquid and crystallized, and heated, emphasize the rapid metabolism of such carbohydrates. The experiments show that differences in the metabolism of the two sugars do exist in favor of the fructose, but that these differences are too slight in the final, net result to have any very great advantage taken of them in the regular diabetic dietary.

The self-administration of insulin is facilitated by an injection-site arm clamp, previously described.[1]

The heat evolved by an ordinary 40 to 60 Watt "Mazda" lamp is sufficient to boil the mixture used in the qualitative Benedict test for glucosuria (2.5 cc. of Benedict's solution plus 4 drops of urine). A metal jacket is used to surround the upright lamp bulb, and to support three test tubes on top of it. Smooth boiling is promoted by the insertion of a clean pebble or segment of a toothpick in each tube.

In the physiologically efficient diabetic regimen, which is the goal of these studies, the importance of the following appears significant:—

(1) A definite daily schedule, in which insulin, food and water, and both physical and mental activity are properly co-ordinated.

(2) Daily written records of insulin, diet, exercise, rest, weight, and systematic tests for sugar in the urine. Monthly summaries of such records for consultations with the physician, permitting deductions to be made as to what changes in the regimen will increase the efficiency.

(3) The higher carbohydrate diet, of greater antiketogenic power, with the time of eating and the form of carbohydrate so chosen as to enable the patient to assimilate and oxidize it best, with the aid of exercise, and of exogenous as well as endogenous insulin.

(4) Small definite amounts of monosaccharides at least fifty per cent fructose (e. g. as in honey) in the diet, when insulin is taken, and when vigorous exercise comes soon after the meal.

(5) Possibly the slightly better utilization of unheated honey's fructose content, even though crystallization has occurred.

(6) The drinking of from one to three glasses of warm, physiological NaCl solution from one-half to three-quarters of an hour before breakfast,

[1]New Eng. J. Med. **217,** 669-70 (1937)

and when further hydration and anti-potassium action are required, of from one to two glasses before the evening meal.

(7) Knowledge of the trend in body weight over the years, as a clue to the proper insulin and diet program to be pursued.

(8) Keeping at nine hours or more the average number of hours of rest per twenty-four hours.

(9) The elimination of hypoglucemic reactions by proper timing of food, insulin, and activity, without producing glucosuria.

(10) Exercise of diverse sorts, to use daily all the muscles possible, in order to keep the number of tissue cells in active carbohydrate metabolism at a maximum.

(11) Minimizing emotional strains of all types, by both psychic and physical adjustments to work and to the environment.

SURVIVAL RATES AMONG PATIENTS WITH ACTIVE PULMONARY TUBERCULOSIS

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As an introduction to future reports we offer a brief account of the mortality and survival rates among the adult patients with active pulmonary tuberculosis admitted to the State Sanatorium during the years 1930 and 1931. These years represent the beginning of our present era of therapy and will, therefore, serve as a basis of comparison for future studies. Taken at face value, our mortality rates are very high. If, however, one bears in mind that we admit many hopeless cases in order to remove them, as sources of infection, from their homes and communities the figures will seem less discouraging.

In the year 1930 there were admitted to the State Sanatorium 299 patients with a definite diagnosis of active pulmonary tuberculosis. The following figures are based on the 273 cases who could be traced for five years after their admission in 1930. 58% of these 273 patients were dead within five years. That over one third of these deaths occurred in less than six months after admission is evidence of the number of our patients who are desperately ill when they reach the Sanatorium.

A consideration of the survival rates gives a somewhat more hopeful picture. While only 42% of the 273 patients lived five years after admission, 62% of those alive at the end of one year and 76% of those alive at the end of two years were still alive five years after admission.

Perhaps the most interesting and certainly the most encouraging figures are those for the group of 73 patients who remained at the Sanatorium until discharged, with consent, by the medical staff. Of the 69 traced, 65, or 94%, were still alive five years after admission.

The figures for the 1931 admissions vary only slightly from those for 1930. The five year mortality was 55%. Again over one third of the deaths occurred within the first six months. 63% of those alive at the end of one year and 73% of those alive at the end of two years were still alive five years after admission. 76 of the patients were discharged with the consent of the medical staff. 62 of these were traced and of these, 58, or 94%, were alive five years after admission.

There are many other matters of interest which could be considered in a study of survival rates: the condition on admission of those who survived; the number who received collapse therapy; the subsequent history of those leaving against medical advice; the economic status of the survivors compared with the economic status of those who died after discharge. But in this introductory report we wish to confine ourselves to the simple statistics given in order that we may not cloud the two important points that our study has brought out, namely, the high mortality during the first six months after admission and the excellent prognosis for those who remain until discharged, with consent, by the medical staff.

We must look to the medical profession of the State to assist us in lowering the early mortality by encouraging the patients to come to the Sanatorium before their disease has reached a hopeless stage.

Summary

Because of the large number of hopeless cases admitted as a public health measure, our five year mortality rate is high.

The prognosis is excellent for patients who remain at the Sanatorium until discharged with consent by the medical staff. 149 patients admitted in 1930 and 1931 were discharged with consent. Of the 131 who were traced, 123, or 94%, were alive five years after their admission.

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GROUP HEALTH

There is no doubt that the tremendous broadening of our knowledge of human ailments is threatening the system of individualized medicine. Every new discovery carries with it a challenge to the individual practitioner to increase his studies. To be sure the practitioner of today has a far stronger armamentarium against human ills than he had a few years ago, but still, with few exceptions, he is always well behind the advances in medicine. The natural and proper result has been the development of group practice. The strength of the bonds uniting the constituents of a group varies greatly. At one end of the scale is the man who has his office alone and sends his problem patients to one of several of his colleagues according to the nature of the problem. At the other extreme of group practice is the group that combines in some organized way to consolidate expenses and facilitate consultation. This is generally conceded to be beneficial to the doctor and to the patients although many people consider it unethical in that it somewhat interferes with the free action of its members.

Now of late a further modification of the group plan has come into fairly common usage and has caused no little furor. We speak of what is sometimes called the group health plan. This in brief consists of a group of doctors in quite firm union agreeing to provide without further charge all necessary medical care to those who make stipulated regular payments. That is, they make what amounts to an insurance contract. This plan may or may not include hospitalization for a limited period and certain medications.

The two chief objections to the plan by its opponents are that it is unethical and that the personal relationship between the doctor and the patient is somewhat jeopardized. These claims hardly appear entirely rational. Arbitrarily to call it unethical is to dispense with it without fair consideration. True, if unethical men form a group, the group would more than likely be unethical. On the other hand, if respectable men combine under an honest contract to provide medical care that an individual doctor admittedly cannot give alone, a very definite need is being served. Honest and efficient serving of a worthy cause may diminish the returns of the inefficient but it is never unethical.

The present personal relationship between doctor and patient might be modified by such a plan. But would this be so detrimental? We doubt it. How often we see patients we would like to refer to a man whom we know to be learned in a particular specialty only to have the patient refuse on the grounds that he doesn't like his personality. Again how often we see or hear of patients who are bound by the personality of one we know to be little better than a complete quack. These irrational personal feelings could well stand modification. A happy medium should be set up between the psychological and organic aspects of disease.

The satisfactory working of this plan would protect the patient from the sudden and severe financial burden that generally accompanies serious illness and frequently makes it impossible to obtain satisfactory medical care. Further it permits and encourages the patient to seek expert advice in the early stages of illness or even when no symptoms of illness are present. The tendency would be to rely on the doctor rather than on the drug store or on quack medicine. This stimulus to preventive medicine is perhaps the best aspect of the plan. Of little less advantage to the patient is the fact that the doctor is not restrained from early consultation

by inadequate financial resources of the patient.

This system might have certain drawbacks to the patient. Having signed up he would be largely committed to the members of the group for all his medical care. This would be no disadvantage if all the members were of first class ability, but it is to be expected that most of the groups would have one if not more weak members, and certainly there would be a strong tendency for the doctors not to recommend a consultant outside the group. Another very definite possibility that would work to the detriment of the patient is that the doctor, feeling a certain security within the group, would not give his full interest to a given patient. Of course this security would have another, a beneficial, effect in that the doctor would not have the incentive of financial gain to retain a patient who could better be treated by another.

Having thus far dealt chiefly with what of advantage and of disadvantage the patient can derive let us now consider the doctor's viewpoint. The strict individualist would feel a limitation of expression and action but the broader man would welcome the freedom to consult with his colleagues, and the relative security of the position would permit him to practice according to the dictates of his better judgment rather than according to the fancies and finances of his patient. Except for these factors there seems little doubt that the medical members of the plan would be well satisfied provided they could make a satisfactory living at it. Whether they could or not could be determined with certainty only by trial. There are certain characteristics of human nature which militate against the financial success of such a plan conscientiously carried out. To be successful it requires an exceptional degree of co-operation on the part of both doctors and patients. The clientele would have to be selected with great care and certain limitations provided regarding chronic illnesses and chronic complainers. Otherwise it would be an open field for the chronics and neurotics at the expense of the wholesome and the doctors. Think what a time a good malingerer would have if no bills were issued for doctors' visits. This is where the financial success is likely to break down. Insurance companies with their many years of experience, their well developed statistical departments, their sound financial knowledge and extensive medical study have not yet arrived at a satisfactory solution to health insurance.

Obviously the group health plan has its advantages and its disadvantages. Summarily to condemn it or condone it cannot now be done with justice. To say it is unethical and to ostracize its members merely serves to discourage the worthy from trying an experiment that might go a fair way toward solving many problems. It leaves only those to try it who have nothing to lose by so doing. The natural result would be failure of the plan without a fair trial. If it is to be a desirable thing it must be entered into by the best the profession has to offer. In the final analysis it will be the grade of both the professional and lay members more than the contract which will determine the success or failure of a given group. It would require an almost blind faith in human nature to contract to take care of all the ills of all comers. For practical purposes a person is ill when he wishes to consider himself ill. Many derive exceeding satisfaction in such considerations, which would put the contracting doctor decidedly on the defensive. But, just to bear in mind a regrettable, albeit we hope vague, possibility, even this would be better than putting the medical profession into the hands of some of the politicians that we have in this age.

Rhode Island Hospital

CLINICAL PATHOLOGIC CONFERENCE

PETERS HOUSE, TUESDAY, MARCH 22, 1938
CASES PRESENTED BY DR. CHARLES F. GORMLY

Today we present two cases, both of which were diagnosed as undulant fever, yet neither of them came to postmortem because of undulant fever.

Case 1. E. D., a sixty-year-old American female, married, white, was admitted July 26, 1937. She had been well, except for "shingles" one year previous, until four weeks before entry, when she caught a cold with cough and remained in bed until the day of entry. She had progressive weakness, anorexia, cough, fever and night sweats. There was no sputum, no hemoptysis. Examination found a well nourished, well developed, moderately pale female, coughing occasionally. Temperature, 99.6; pulse, 86; respiration, 26; blood-pressure, 130/75. Examination of the chest was negative except for a few rales at bases of lungs.

LABORATORY FINDINGS:—Hemoglobin, 60; red blood cells, 3.00; white blood cells, 6.200; poly-

morphonuclear leucocytes, 63%; no young forms. Chest X-ray and electro-cardiograph normal. Undulant fever agglutination and two undulant fever skin tests were negative.

Through her stay, the patient ran a semi-undulating fever, on discharge being nearly afebrile. Blood counts did not change appreciably. Three weeks after entry, undulant fever agglutination became positive in 1/640 dilution. Fluid appeared in the left knee. On aspiration, thirty cc. of thick, tenacious pus was obtained, on culture showing baccilus coli and Gram staining, spore bearing rods. No evidence of brucella mellitensis.

The interesting thing about this woman was in the blood. She had this complete change in her blood picture from the previous admission. We based our diagnosis entirely on the blood findings. She was seen by a number of men including Dr. Shields Warren, who consulted with us on the smears and on the patient. The case was diagnosed as a myelogeneous leukemia.

Case 2. D. D., a forty-year-old, white, married female, was admitted May 8, 1937, complaining of rash and fever of three weeks duration. She had been well until the age of sixteen, when she had a severe "colitis" with bloody mucous diarrhœa, ten to fifteen stools daily for several months, and ever since had had occasional milder attacks, supposedly brought on by nervousness and by "acid" foods. She had had very little trouble in recent years. Two months before entry, patient had become "run down" and irritable. Six weeks before entry, she suffered from a right lower molar tooth-ache, with swelling. Her dentist treated this palliatively at first, then by extraction. Three weeks before entry, because of failure to heal, he "scraped the bone." Shortly afterwards the patient developed a generalized maculo-papular rash and moderate fever. The rash and fever persisted with a few remissions until the day of entry. Loss of weight, bowel disturbance, or exposure to infectious disease is not mentioned.

Examination revealed a well developed and well nourished middle aged female weighing 145 pounds, with a generalized red maculo-papular rash, most marked in the extremities. She seemed to be in no distress. Temperature, 104.2; pulse, 130; respiration, 25; blood-pressure, 130/80. Oral hygiene was poor. The tip of the spleen was felt on deep inspiration. The physical examination was otherwise negative.

LABORATORY FINDINGS: Hemoglobin, 74%; red blood cells, 4.42; white blood cells, 8,400; 92% polymorphonuclears, no abnormal forms. The urine, blood cultures, undulant fever skin test and agglutination, Widal reaction, all were negative. The stools were repeatedly negative for occult blood. Gastric analysis showed no free hydrochloric acid.

During her six weeks stay in the hospital the patient ran a semi-undulating fever. She lost twenty pounds in weight. The rash shortly disappeared. Three weeks later the undulant fever agglutination test was positive in 1/320 dilution. Proctoscopy was negative. On discharge, the patient was still febrile.

She was readmitted on January 22, 1938. She stated that during her previous hospital stay and ever since, she had had a non-bloody diarrhœa. Since her discharge her course had been one of continued loss of weight, fever, and progressive weakness. She had lost 50 pounds in weight. Her reentry was precipitated by a sudden exacerbation of the diarrhœa. Examination showed an emaciated, seventy-pound woman, lying weakly in bed, with a pitifully quavering voice. Her diarrhœa was almost uncontrollable. Temperature, 98.0; pulse, 130; respiration, 18; blood-pressure, 110/80. There were many excoriations on the lower half of the body. Marked dryness of the skin was noted on the upper part of the body, with hypertrophic areas behind the elbows. The hair was dry, coarse and sparse. The eyes were normal. The tongue was atrophied on the edges, beefy in the center. The heart and lungs were negative. The liver edge was down three fingers, smooth, not tender on pressure. Pelvic and rectal examinations negative. There were plantar flexion contractures of both feet. Knee-jerks were equal and hyperactive, bilateral ankle clonus sustained, Babinski and Hoffman reflexes positive, position sense normal.

LABORATORY FINDINGS: Hemoglobin, 88; red blood cells, 4.02; white blood cells, 12,000, 93.5 polymorphonuclears. Blood urea nitrogen, 10. Undulant fever agglutination, 1-40 positive. Urine: albumen, 4 +, many red and white cells. Stools, 1 + guaiac.

The patient at first had thirty to forty stools per day, later reduced by paregoric to fifteen. Under intensive vitamin B therapy, she began to pick up strength remarkably, though her condition never rose above poor. On the ninth hospital day she

suddenly took a turn for the worse. She died two days later.

We felt that we might have been dealing with a vitamin deficiency, particularly because of the rash. We knew she had been on a deficiency diet for a long time. I think that her death was somewhat unexpected although she made very little progress on her second admission.

DISCUSSION

DR. JOHN C. HAM:

"It seemed on first admission that both these patients had a very definite undulant fever.

"The question has been brought up as to the possibility of repeated skin tests causing agglutination. In other diseases that can be tested both by skin test and agglutination, a skin test will not cause a markedly positive agglutination. The possibility has also been suggested that the first patient might have had an aleukemic leukemia when she was first admitted.

"The case with extensive diarrhœa is very interesting. When she was in the first time there was nothing that would point to the condition found. In fact, the red blood count and hemoglobin stayed up remarkably well. Was she getting iron or some other drug when she was outside?"

DR. FRANK B. CUTTS:

"These two cases are quite interesting to me because we saw them while I was on service and labeled them undulant fever. In six months they were both dead. It may be that we diagnosed them incorrectly.

"On attempting to tap the knee we were not successful. For the second patient a Benzidine test was ordered but not carried out. With reference to the skin test for undulant fever I consulted Dr. Diens, bacteriologist at the Massachusetts General Hospital. I asked if repeated skin tests would raise the titre to 640. He thought it was possible, as he had seen it and also quoted various reports which supported this point of view. I think it is fair to say that there is some doubt on the point."

DR. GORMLY:

"I think it is very notable that we are discussing a disease that a few years ago was considered a Mediterranean disease—yet it would be just as strange now to present a case of typhoid fever as it was 20 years ago to present a case of Malta fever."

DR. GUY W. WELLS:

"I was going to ask Dr. Cutts if he knew of any cases where the bacillus was grown out from any fluid."

DR. CUTTS:

"An investigator whose name I have forgotten has been able to obtain the bacilli from the joints, but of a much more virulent type than you would get here."

DR. WELLS:

"I don't know of any reports of work done on joint fluid. This first case, I think, is a very good case clinically for undulant fever. I cannot help feeling that some of these cases are made positive by the skin test. Last year we had a man on the ward who was ill long enough to show positive agglutination, yet he was repeatedly negative. We did skin tests on him and they were at first negative. At the end of four or five days the nodules became red and remained hard for a long time and after three or four skin tests he went into a kind of remission. I believe that his agglutination came back quite positive. I could not help feeling that our skin tests had something to do with it."

DR. GORMLY:

"Of course the farmers are talking about undulant fever, but I don't know whether they are doing anything about it."

A.: "They are now. They are destroying the cattle."

DR. GORMLY:

"I have never seen a patient die of undulant fever but my experience is of only about five years. It runs a long, tedious course."

DR. JAMES P. MCCAFFREY:

"During the stay in the hospital of the first case, and subsequent to a positive skin test, several indurated areas appeared on both arms. We incised the areas and treated them surgically. The patient also had pulmonary signs on admission; the right chest had been aspirated before she came in. Many of the pioneers in undulant fever have described these cases with pulmonary onset. In my experience there have been several cases which we diagnosed as undulant fever, concerning which I was skeptical, but I was convinced that this patient really had undulant fever."

DR. GORMLY:

"Dr. Murphy took care of her after her discharge from the hospital. She did improve but I don't know whether that was due to the vaccine. Her general condition improved quite a bit.

"I would like to raise the question, if at the first admission she had an aleukemic leukemia, with this present picture, in the hospital, of a myelogeneous leukemia, would that be consistent with a positive quiescent stage of leukemia?"

DR. ROBERT J. WILLIAMS:

"In answer to Dr. Gormly's question as to whether the findings of an aleukemic leukemia in July, 1937, were consistent with the findings we saw in March, 1938, I would off-hand say that they would be consistent but I will have to confess I don't know."

DEMONSTRATION OF POSTMORTEM FINDINGS

Case 1: When we opened the peritoneal cavity, the spleen extended two fingers below the costal margin. This spleen weighs 720 grams as compared to the average of 150 to 200 grams. It is large and soft, shows a rather pulpy surface, and the pulp can be scraped quite easily, as is characteristic of a leukemic spleen.

The rest of the findings showed only a slightly enlarged leukemic liver. The kidneys were large and rather pale and no definite leukemic infiltration could be seen. In the mouth was the lesion seen clinically. The lymphnodes were not involved in this case, so we have definitely a leukemia. The fact that the bone marrow, liver and kidney showed leukemia, and the absence of lymphnode involvement are in favor of myelogeneous leukemia and against lymphatic leukemia.

Case 2: This was a very markedly emaciated individual with a slight amount of fluid in the pleural and pericardial cavities. There was slight pitting edema of the extremities. The interesting finding was when we opened the peritoneal cavity—involving the splenic flexure of the colon was this hard mass fixed to the abdominal wall. Here we have the lesion, an annular, circular lesion composed of very hard, firm tissue, obliterating the architecture of the colon. This is an annular carcinoma of the splenic flexure.

The liver in this case extended about two fingers below the costal margin. It weighs 2,000 grams, as compared with the average of 1,600 to 1,800 grams."

Q.: "Were there any metastases?"

A.: "No metastases other than the extension to the abdominal wall where it was fixed. No nodes were found."

Postmortem diagnosis:

Case No. 1. Myelogenous leukemia.

Case No. 2. Adenocarcinoma of the colon.

PROVIDENCE MEDICAL ASSOCIATION

Minutes of the April Meeting

The regular monthly meeting of the Providence Medical Association was called to order by the Vice-President, Dr. Harry E. Messinger, Monday, April 4, 1938 at 8:30 P. M.

The minutes of the last meeting were read and approved. The Vice-President read a communication from the Rhode Island Nutrition Association outlining its purposes, giving a list of its officers, and inviting any of the members of this organization to attend its first meeting.

The scientific program was a Symposium on Sulfanilamide, presented by the Resident Staff of the Charles V. Chapin Hospital, and consisted of the following papers:—

1. The Chemistry and Mode of Action of Sulfanilamide and Related Compounds, by Edmund G. E. Anderson, Resident Chemist.
2. Sulfanilamide in the Treatment of Beta-Hemolytic Streptococcal Infections, by Dr. Kalei K. Gregory, Resident Physician.
3. Sulfanilamide in the Treatment of Other Infections, by Dr. Raymond E. Stevens, Resident Physician.
4. The Toxic Manifestations of Sulfanilamide, by Dr. Edward J. West, President Physician. This last paper also summed up the entire presentation.

Dr. Eric Stone and Mr. Anderson discussed the Symposium.

Mr. Willis H. Chandler of the Rhode Island Tuberculosis League then gave an address on Tuberculosis in which he described the work of the League, advising the use of the tuberculin skin test and the X-raying of all positive reactors. He also described the national campaign for the early discovery of tuberculous infection.

The meeting adjourned at 10:35 P. M. Attendance 200.

Collation was served as usual.

Respectfully submitted,

WILFRED PICKLES, M.D., *Secretary Pro. Tem.*

Minutes of the May Meeting

The regular monthly meeting of the Providence Medical Association was called to order by the President, Dr. Alex. M. Burgess, on Monday, May 2, 1938, at 8:40 P. M.

The minutes of the last meeting were read and approved. Their applications having been approved by the Standing Committee, the following were elected to membership:

G. Edward Crane
Albert E. Geremia
William A. Mulvey
John Joseph Sheehan, Jr.

The Secretary read the following resolution approved by the Standing Committee:

"Whereas there are now available efficient sera for the treatment of a large percentage of the cases of lobar pneumonia and

Whereas the use of such sera has proved to be life saving in a large number of cases as shown by numerous reliable clinical reports and

Whereas the cost of such sera as purchased in the market is very high and represents a heavy burden on patients and on hospitals and

Whereas such sera has been made available without cost by the action of State Health Authorities in several neighboring states including Massachusetts, Connecticut and New York

Be it resolved that the Rhode Island Medical Society be requested to take action, calling the attention of the State Health Authorities to the above facts and requesting that serum be provided by the State free of charge for the treatment of indigent patients."

It was voted that a copy be sent to the Secretary of the Rhode Island Medical Society.

Dr. Streker reported progress on the part of the sub-committee of the Standing Committee in regard to the employment of an executive secretary. He announced that arrangements had been made by the Trustees of the Rhode Island Medical Society to provide office space in the Medical Library Building and reported also that there were available many excellent candidates for the office of executive secretary. On motion by Dr. Streker it was voted that $2000 be appropriated for the expenses incident for an executive secretary for the balance of the calendar year. On motion by Dr. Burgess it was voted that the President appoint a committee of five members to act in an advisory capacity with the Director of Public Welfare in Providence regarding Medical Aid to those in temporary relief. The President reported the deaths of Dr. C. H. Leonard and Dr. Frank Gray.

The President then introduced Dr. John G. Walsh who acted as Chairman of the Symposium on Hypertension and Albuminuria in Pregnancy which was presented by members of the Staff of the Boston Lying-In Hospital.

1. Eclampsia. (Remarks on present state of the problem. Classifications.) Dr. F. S. Kellogg.
2. Relationship of Endocrines to Eclamptic State. Treatment of Pre-eclampsia and Eclampsia. Dr. H. M. Teel.
3. The Nephropathies. (Criteria for ultimate correct diagnosis.) Dr. D. E. Reid.

The first paper was by Dr. Kellogg who spoke on Eclampsia especially regarding classifications, nomenclature, and also on treatment.

The second speaker was Dr. Teel who spoke particularly about the occurrence of and treatment of acute pulmonary edema occurring in toxemias of pregnancy. The last speaker was Dr. Reid who spoke especially on the relation of cardio-vascular or renal disease to toxemias of pregnancy and of the effect of pre-existing disease on pregnancy and the effect of pregnancy on those previously normal.

The papers were discussed by Dr. Brackett and Dr. Frank B. Cutts.

The President announced the appointment of the following Golf Committee: Doctors N. Bolotow, Baldridge, McCoart, Migliaccio, and Hunt.

The meeting adjourned at 10:30.

Attendance 119.

Collation was served.

Respectfully submitted,

HERMAN A. LAWSON, M.D.
Secretary

Rhode Island Hospital

Schedule for June, 1938

Thursday, June 2

R. I. Medical Society Clinics,
9:00 A. M.-12:30 P. M.
Luncheon in Nurses' Dining Room, 12:45 P. M.

Mondays

Surgical Grand Rounds, 10:00 A. M.
I Surg. Grand Rounds, June 6, 20.
II Surg. Grand Rounds, June 13, 27.
Thoracic Clinic, 4:30 P. M.

Tuesdays

Gastro-Intestinal Clinic, 9:30 A. M.
Surgical Grand Rounds, 10:00 A. M.

II Surg. Grand Rounds, June 7, 21.
I Surg. Grand Rounds, June 14, 28.

Wednesdays

Tumor Clinic, 10:00 A. M.

Thursdays

Orthopedic Grand Rounds, 9:00 A. M.
Thoracic Clinic, 11:30 A. M.
Gyn. Path. Conference every Thursday, 11:30 A. M.

Fridays

Fracture Grand Rounds, 11:00 A. M.
Pediatric Grand Rounds, June 3, 17.

Saturdays

Neurological Grand Rounds, 9:00 A. M.
Medical Conference, 10:00 A. M.

NOTE: Clinical-Pathologic Conference discontinued until October.

Dr. Gilmore W. Soule, a former interne at the R. I. Hospital, has opened an office for the practice of general medicine at 32 School Street, Rockland, Me.

Dr. Norman C. Margolius has opened an office for the practice of Gynecology and Obstetrics at 125 Grove Street, Waterbury, Conn.

Dr. Dale Vermillion, of Goodland, Kansas, is taking a post graduate course at the Eye and Ear Infirmary in Boston.

Dr. Warren Poland, who interned at the R. I. Hospital from May 1936 to May 1938, is now at Plymouth County Tuberculosis Hospital, South Hanson, Mass., as Assistant Superintendent.

Dr. S. Forest Martin, who has been at the Massachusetts Eye and Ear Infirmary for the past two years, has opened an office for the practice of ophthalmology at 101 Bay State Road, Boston, Mass.

On May 8th, 1938, at the Providence Lying-In Hospital, to Dr. and Mrs. Morgan Cutts, a son.

Dr. James Hollis Crowley, of Providence, started a two year internship at the R. I. Hospital, May 15th, 1938. Dr. Crowley is a graduate of Providence College and Tufts Medical School, 1938.

On April 1st, 1938, Dr. and Mrs. Gayton S. Bailey and daughter, Bettina Ann, left by automobile for Seattle, Wash., where Dr. Bailey expects to practice. Enroute they expect to visit in Texas.

On March 29th, 1938, Dr. Ralph Purvine arrived in Providence, having journeyed by automobile from his home in Salem, Oregon. On April 1st he started a six months internship at the Lying-In Hospital. Dr. Purvine, while in the West, saw Dr. and Mrs. Luther MacDougal and Dr. and Mrs. Nathaniel Beaver.

On November 10, 1937, at East Bridgewater, Mass., Dr. Edmund C. Laurelli was married to Miss Lena M. Andrews of Providence. Dr. Laurelli interned at the R. I. H. from April 1931 to April 1933.

In January, 1937, at Hyannis, Mass., Dr. Jerome J. Ryan was married to Miss Gladys Hewitt. Dr. Ryan interned at the R. I. H. and was night superintendent for one year.

On April 15th, 1938, Malcolm S. Allan, Tufts Medical School 1938, began his regular twenty-four months' internship at the R. I. H. Dr. Allan's home is at Naushon Island, Woods Hole, Mass.

BOOK REVIEW

THE 1937 YEAR BOOK OF GENERAL MEDICINE. pp. 832, Cloth $3.00, post paid. The Practical Medicine Year Books, The Year Book Publishers, Inc., 304 South Dearborn Street, Chicago, 1937.

For thirty-seven years the Practical Medicine Year Books have been serving the profession with résumés of the important articles written during each year. This year's volume was edited by the same as last year's. This year's volume has the same excellent group of editors as last year's and follows the same general form, even to the absence of Dr. Castle's name from the list of editors as it appears over the binding of the book.

The articles, with frequent editorial comments, are an excellent guide to further study of the most recent advances in medicine, and in most instances a good deal of specific information is presented for those who have not the time to delve more deeply into a subject. The greater part of the information is of direct clinical interest although in some instances, as in some of the discussions of the extrinsic and intrinsic factors in pernicious anemia the subject matter might appear a little ethereal to the ordinary reader.

It would hardly be possible to give a satisfactory review of many of the subjects in this article, but to take two subjects that are of growing interest to-day we might consider the operative treatment of hypertension and the use of sulfanilamide and related drugs. There are several very good articles on both these subjects but unless one knows a good deal about the subjects beforehand he is left somewhat in mid air. This is so also with many of the other subjects and would appear to be the chief weakness of any book of this nature. Because of necessary brevity intricate subjects are inadequately presented.

JOHN C. HAM, M.D.